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TIBIAL SUBCHONDRAL SCLEROSIS IS SIGNIFICANTLY CORRELATED WITH LONG-TERM (3-YEAR) RADIOLOGICAL PROGRESSION OF KNEE OSTEOARTHRITIS

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Objective: The aim of the present study was to investigate which of 13 radiographical knee features of the Altman grading scale for knee osteoarthritis [joint space narrowing for the medial compartment (JSNM) and the lateral tibial compartment (JSNL), marginal osteophytes formation at the medial femoral condyle (OFM), medial tibial plateau (OTM), lateral femoral condyle (OFL), and lateral tibial plateau (OTL), subchondral sclerosis at the medial femoral condyle (SFM), medial tibial plateau (STM), lateral femoral condyle (SFL) and lateral tibial plateau (STL), valgus or varus malalignment (MAL), bony attrition of the medial tibial plateau (ATT) and the presence or absence of hypertrophy of the tibial spinous insertions of the cruciate ligaments (HYP)] was the best predictor of joint space narrowing at the medial femoro-tibial compartment, over a period of 3 years.

Method: Data were derived from a cohort of 106 individuals corresponding to the placebo arm of a 3-year double-blind placebo controled trial. We allocated to each X-ray a score from 0 to 3, depending upon the severity of the 13 radiographic features. We also measured, at baseline and after 3 years, the mean joint space width (JSW) by digital image analysis with a validated computerized algorithm and the minimal JSW with a graduated magnifying lens.

Results: STM was the only parameter significantly correlated with 3-year changes in mean JSW (r = 0.29, p = 0.02) and minimal JSW (r=0.23, p=0.04). We found a statistically significant difference (p=0.04) between patients with a STM of 0 or 1 who had a mean joint space narrowing of 5.1 (SD: 18.0) % compared with patients with a STM of 2 or 3 who had a gain of 9.0 (25.8) % over 3 years. The difference was also significant (p=0.01) when considering 3-year changes in the minimal JSW, with a change of -10.7 (24.7) % and + 16.0 (53.9) % for patients with a STM of 0 or 1 and 2 or 3, respectively.

Conclusion: We conclude that assessment of tibial sclerosis could predict the 3-years knee radiological progression. Nevertheless, a precise measurement, may be with a DXA, could probably be useful for a better assessment of tibial sclerosis.

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RELATIONSHIP BETWEEN SUBCHONDRAL TIBIAL BONE MINERAL DENSITY AND JOINT SPACE WIDTH AT THE MEDIAL FEMORO-TIBIAL COMPARTMENT IN PATIENTS WITH KNEE OSTEOARTHRITIS

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Background. Preliminary studies have shown that dual energy X ray absorptiometry (DXA) can produce images of sufficient quality for a precise measurement of density of the subchondral bone.

Objective. The aim of our study was to investigate the relationship between subchondral tibial bone mineral density (BMD) and joint space width at the medial femoro-tibial knee joint.

Method: In all, 67 patients, from both genders, with knee OA diagnosed according to the American College of Rheumatology criteria, were included in the study. Radiographic Schuss views were taken and mean joint space width (JSW) measurement at the medial femoro-tibial joint was performed with a digitized image analysis. BMD of the subchondral tibial bone was assessed by dual energy X ray absorptiometry (DXA) with a highly reproducible technique (CV=I .5 %).

Results: The mean (SD) age of the patients was *65.2* (8.6) years, with a body mass index of 28.5 (5.9) kg/m^2. Mean JSW was 4.4 (1.8) mm. Mean BMD of the subchondral bone was 0.889 (0.22) g/cm^2. There was a significant negative correlation between subchondral BMD and mean JSW (r = -0.31, p <0.001). When dividing our population into quartiles of BMD, patients in the first quartile (BMD <0.733) have mean JSW of 5.05 *(1.57)* mm compared with 3.70 (2.18) mm for patients in the fourth quartile (BMD > 0.999). Difference between the two populations was statistically significant (p = 0.05).

Conclusion: BMD is highly correlated with JSW and could be useful for the diagnosis of knee OA. However, longitudinal studies must be done in order to assess the interest of measuring subchondral bone density for the monitoring of joint space narrowing in knee OA.

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PAIN RELIEF IN OSTEOARTHRITIS (OA) OF THE KNEE

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The role of the pure analgesic, acetaminophen *(A)*, relative to that of non-steroidal anti-inflammatory drugs (NSAIDs) in the treatment of QA remains controversial. The few published studies are conflicting, and in its 2000 update, the American College of Rheumatology recommended initial treatment with A in *OA* of the hip or knee.

Methods: A 12-week randomized, double-blind, placebo *(P)*controlled trial of diclofenac *(D)* (75 mg bid) vs. *A* (1000 mg qid) in medial knee OA. Inclusions: radiographic QA (modified KellgrenLawrence grade ⇒1 and medial joint involvement) and symptomatic OA: (1) pre-enrollment ambulatory pain (VAS of ⇒30 in WOMAC question 1 or moderate pain by five-point Liked) or (2) increased pain during 2-week washout of any pre-existing medications (VAS change of ⇒10 or Likert change of ⇒1). 82 subjects were randomized. Analysis: By WOMAC and Lequesne after washout (week 0) and at 2 and 12 weeks of treatment with *D* (25 subjects), *A* (29 subjects), or P (28 subjects).

Results: 61 subjects completed the study (20/22/19 in *D/A/P* groups). Groupwise dropouts by 2 or 12 weeks were as follows: By 2 weeks: 2/1/2. Cumulatively by 12 weeks: 5/8/9. Reasons for dropout were insufficient pain relief (2/5/3), upper gastrointestinal side effects (1/2/0), and other reasons (2/1/6). Results of the WOMAC pain section (WOp) and WOMAC total (WOt) are presented (Table). The improvement in WOp and WOt from *D* was significantly greater than that from *A* or *P* at week 2 (p⇒0.003), though the difference did not reach statistical significance at week 12. A was never significantly different from *P*. Lequesne results were comparable to WOMAC.